

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

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1. (currently amended) A method for maintaining a system for database management, the method comprising:

during splitting of a leaf block of a database index recording an address of a newly created leaf block; [[and]]

maintaining the [[new]] address of the newly created leaf block in a list as part of metadata of a primary B+tree [[.]] ; and

maintaining a measure of invalid guess-database block addresses by calculating a ratio of a count of database block addresses in the list of new addresses to a total number of leaf blocks of the primary B+tree.

A3 [ 2. (cancelled)

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2. (currently amended) The method according to claim [[2]] 1, wherein the measure of invalid guess-database block addresses applies to mapping tables and secondary indexes on the primary B+tree.

<sup>3</sup>  
~~4~~. (currently amended) The method according to claim ~~[[2]]~~ <sup>1</sup>, wherein the list of database block addresses and the ratio are maintained only when the ratio is less than a threshold value.

<sup>4</sup>  
~~5~~. (original) The method according to claim ~~4~~ <sup>3</sup>, wherein the threshold value for the ratio is about 10%.

<sup>5</sup>  
~~6~~. (original) The method according to claim ~~5~~ <sup>2</sup>, further comprising:  
adjusting a guess-DBA quality of at least one of the mapping table and the secondary index utilizing the ratio.

<sup>6</sup>  
~~7~~. (original) The method according to claim ~~6~~ <sup>3</sup>, wherein if the ratio is below the threshold value the method further comprises:  
selectively correcting entries in the mapping table and/or secondary index.

<sup>1</sup>  
~~8~~. (original) The method according to claim ~~7~~ <sup>6</sup>, wherein correcting entries in the mapping table comprises for all rows in a list of blocks in the primary B+tree:  
obtaining corresponding mapping table row identifiers and database block addresses of a current block in the list;  
sorting the corresponding mapping table row identifiers;

obtaining mapping table rows corresponding to the mapping table row identifiers; and  
updating a guess-DBA component if it has changed.

<sup>8</sup> <sup>1</sup>  
~~9~~. (original) The method according to claim ~~8~~, wherein the correcting is carried out on-line in a piece-wise manner.

<sup>9</sup> <sup>3</sup>  
~~10~~. (original) The method according to claim ~~9~~, wherein correcting entries in the secondary index comprises for all rows in a list of blocks in the primary B+tree:

obtaining a secondary index key, a primary key and a database block address of a current block in the list of blocks;

<sup>AB</sup>  
sorting the secondary index keys, primary keys and database addresses in order of (secondary index key, primary key) pairs;

obtaining an index row corresponding to the (secondary index key, primary key) pair; and

updating a guess-DBA component of the index row if the guess-DBA has changed.

<sup>10</sup> <sup>9</sup>  
~~11~~. (currently amended) The method according to claim ~~[[11]]~~ ~~10~~, wherein the correcting is carried out on-line in a piece-wise manner.

<sup>11</sup>  
~~12~~. (original) The method according to claim <sup>3</sup>~~4~~, wherein if the ratio is above the threshold value the method further comprises:

correcting guess-database addresses on a per object basis.

<sup>12</sup>  
~~13~~. (original) The method according to claim <sup>11</sup>~~12~~, wherein correcting guess-database block addresses on the mapping table comprises:  
performing a full scan of the mapping table;

determining for each row of the mapping table a correct guess-database block address by traversing the primary B+tree up to a penultimate level;

updating each row of the mapping table with the correct guess-database block address; and

<sup>13</sup>  
committing the correct guess-database address to the mapping table in batches.

<sup>13</sup>  
~~14~~. (original) The method according to claim <sup>11</sup>~~12~~, wherein correcting guess-database block addresses on a per object basis comprises for each secondary index object:

performing a full scan of the secondary index object;

determining for each row of the secondary index a correct guess-database block address by traversing the primary B+tree up to a penultimate level;

updating each row of the secondary index with the correct guess-database block address; and

committing the correct guess-database block address to the secondary index in batches.

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~~15.~~ (original) The method according to claim 1, further comprising:  
maintaining a list of database block addresses in the list.

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~~16.~~ (currently amended) A system ~~for organizing a database index~~, the system comprising:

a list of addresses of blocks newly created during splitting of a primary B+tree [[:]] ;

a count of database block addresses in the list; and

a ratio of count of database block addresses to total number of leaf blocks as a measure of invalid guess-database block addresses.

17. (cancelled)

18. (cancelled)

<sup>16</sup>  
~~19~~. (original) The system according to claim <sup>15</sup>~~16~~, wherein the database index is a primary B+tree structure, wherein the system further comprises:

a mapping table used to support bitmap indexes.

<sup>17</sup>  
~~20~~. (original) The system according to claim <sup>16</sup>~~19~~, further comprising:

a bitmap index supported by the mapping table.

<sup>18</sup>  
~~21~~. (original) The system according to claim <sup>15</sup>~~16~~, wherein the database index is a primary B+tree structure, wherein the system further comprises:

a secondary index structure comprising hybrid row identifiers.

<sup>19</sup>  
~~22~~. (currently amended) A computer program product for performing a process for maintaining a database management system, comprising:

A<sup>13</sup>  
a computer readable medium; and

computer program instructions, recorded on the computer readable medium, executable by a processor, for performing the steps of:

during splitting of a leaf block of a primary B+tree recording an address of a newly created leaf block; [[and]]

maintaining the [[new]] address of the newly created leaf block in a list as part of primary B+tree metadata [[.]] ; and

maintaining a measure of invalid guess-database block addresses by  
calculating a ratio of a count of database block addresses in the list of new  
addresses to a total number of leaf blocks of the primary B+tree.

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20. (currently amended) A system for performing a process for maintaining  
a database management system, comprising:

a processor operable to execute computer program instructions; and

a memory operable to store computer program instructions executable by  
the processor, for performing the steps of:

during splitting of a leaf block of a primary B+tree recording an address of  
a newly created leaf block; [[and]]

maintaining the [[new]] address of the newly created leaf block in a list as  
part of primary B+tree metadata [[.]] ; and

maintaining a measure of invalid guess-database block addresses by  
calculating a ratio of a count of database block addresses in the list of new  
addresses to a total number of leaf blocks of the primary B+tree.